<u>RAW SEQUENCE LISTING</u>

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.

Application Serial Number: _____ 10/644, 052B _____
Source: _____ JFW16 _____
Date Processed by STIC: _____ 11/01/2006 _____

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IFW16

RAW SEQUENCE LISTING   DATE: 11/01/2006
PATENT APPLICATION: US/10/644,052B   TIME: 12:14:57

Input Set : A:\C1037.70048US00.revised.ST25.txt
Output Set: N:\CRF4\11012006\J644052B.raw

```
 3 <110> APPLICANT: Krieg, Arthur M
 4        Samulowitz, Ulrike
 5        Vollmer, Joerg
 6        Uhlmann, Eugen
 7        Jurk, Marion
 8        Lipford, Grayson
 9        Rankin, Robert
11 <120> TITLE OF INVENTION: IMMUNOSTIMULATORY NUCLEIC ACIDS
13 <130> FILE REFERENCE: C1037.70048US00
15 <140> CURRENT APPLICATION NUMBER: US 10/644,052B
16 <141> CURRENT FILING DATE: 2003-08-19
18 <150> PRIOR APPLICATION NUMBER: US 60/404,479
19 <151> PRIOR FILING DATE: 2002-08-19
21 <150> PRIOR APPLICATION NUMBER: US 60/429,701
22 <151> PRIOR FILING DATE: 2002-11-27
24 <150> PRIOR APPLICATION NUMBER: US 60/447,377
25 <151> PRIOR FILING DATE: 2003-02-14
27 <150> PRIOR APPLICATION NUMBER: US 60/404,820
28 <151> PRIOR FILING DATE: 2002-08-19
30 <160> NUMBER OF SEQ ID NOS: 391
32 <170> SOFTWARE: PatentIn version 3.3
34 <210> SEQ ID NO: 1
35 <211> LENGTH: 17
36 <212> TYPE: DNA
37 <213> ORGANISM: Artificial sequence
39 <220> FEATURE:
40 <223> OTHER INFORMATION: Synthetic oligodeoxynucleotide
42 <400> SEQUENCE: 1
43 acgtcgtttt cgtcgtt                                              17
46 <210> SEQ ID NO: 2
47 <211> LENGTH: 16
48 <212> TYPE: DNA
49 <213> ORGANISM: Artificial sequence
51 <220> FEATURE:
52 <223> OTHER INFORMATION: Synthetic oligodeoxynucleotide
54 <400> SEQUENCE: 2
55 gcgtcgacgt cgacgc                                               16
58 <210> SEQ ID NO: 3
59 <211> LENGTH: 16
60 <212> TYPE: DNA
61 <213> ORGANISM: Artificial sequence
63 <220> FEATURE:
64 <223> OTHER INFORMATION: Synthetic oligodeoxynucleotide
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CP9-6.7)

RAW SEQUENCE LISTING   DATE: 11/01/2006
PATENT APPLICATION: US/10/644,052B   TIME: 12:14:57

Input Set : A:\C1037.70048US00.revised.ST25.txt
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 67 gcgtcgtttt cgtcgc                                               16
 70 <210> SEQ ID NO: 4
 71 <211> LENGTH: 19
 72 <212> TYPE: DNA
 73 <213> ORGANISM: Artificial sequence
 75 <220> FEATURE:
 76 <223> OTHER INFORMATION: Synthetic oligodeoxynucleotide
 78 <400> SEQUENCE: 4
 79 tccatgacgt tcctgatgc                                            19
 82 <210> SEQ ID NO: 5
 83 <211> LENGTH: 17
 84 <212> TYPE: DNA
 85 <213> ORGANISM: Artificial sequence
 87 <220> FEATURE:
 88 <223> OTHER INFORMATION: Synthetic oligodeoxynucleotide
 90 <400> SEQUENCE: 5
 91 tcgtcgtttt cgtcgtt                                              17
 94 <210> SEQ ID NO: 6
 95 <211> LENGTH: 22
 96 <212> TYPE: DNA
 97 <213> ORGANISM: Artificial sequence
 99 <220> FEATURE:
100 <223> OTHER INFORMATION: Synthetic oligodeoxynucleotide
102 <400> SEQUENCE: 6
103 tcgtcgtttt cggcggccgc cg                                        22
106 <210> SEQ ID NO: 7
107 <211> LENGTH: 17
108 <212> TYPE: DNA
109 <213> ORGANISM: Artificial sequence
111 <220> FEATURE:
112 <223> OTHER INFORMATION: Synthetic oligodeoxynucleotide
114 <400> SEQUENCE: 7
115 tcgtcgtttt cgtcgtt                                              17
118 <210> SEQ ID NO: 8
119 <211> LENGTH: 16
120 <212> TYPE: DNA
121 <213> ORGANISM: Artificial sequence
123 <220> FEATURE:
124 <223> OTHER INFORMATION: Synthetic oligodeoxynucleotide
126 <400> SEQUENCE: 8
127 tcgtcgtttc gtcgtt                                               16
130 <210> SEQ ID NO: 9
131 <211> LENGTH: 17
132 <212> TYPE: DNA
133 <213> ORGANISM: Artificial sequence
135 <220> FEATURE:
136 <223> OTHER INFORMATION: Synthetic oligodeoxynucleotide
138 <400> SEQUENCE: 9
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Input Set : A:\C1037.70048US00.revised.ST25.txt
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144 <212> TYPE: DNA
145 <213> ORGANISM: Artificial sequence
147 <220> FEATURE:
148 <223> OTHER INFORMATION: Synthetic oligodeoxynucleotide
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151 tcgtcgtttt cgtcgtt                                              17
154 <210> SEQ ID NO: 11
155 <211> LENGTH: 17
156 <212> TYPE: DNA
157 <213> ORGANISM: Artificial sequence
159 <220> FEATURE:
160 <223> OTHER INFORMATION: Synthetic oligodeoxynucleotide
162 <400> SEQUENCE: 11
163 tcgtcgtttt cgtcgtt                                              17
166 <210> SEQ ID NO: 12
167 <211> LENGTH: 24
168 <212> TYPE: DNA
169 <213> ORGANISM: Artificial sequence
171 <220> FEATURE:
172 <223> OTHER INFORMATION: Synthetic oligodeoxynucleotide
175 <220> FEATURE:
176 <221> NAME/KEY: misc_feature
177 <222> LOCATION: (3)..(3)
178 <223> OTHER INFORMATION: deazaguanine
180 <220> FEATURE:
181 <221> NAME/KEY: misc_feature
182 <222> LOCATION: (6)..(6)
183 <223> OTHER INFORMATION: deazaguanine
185 <400> SEQUENCE: 12
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W--> 186 tcntcntttt gtcgttttgt cgtt   24
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192 <213> ORGANISM: Artificial sequence
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195 <223> OTHER INFORMATION: Synthetic oligodeoxynucleotide
198 <220> FEATURE:
199 <221> NAME/KEY: misc_feature
200 <222> LOCATION: (3)..(3)
201 <223> OTHER INFORMATION: deazaguanine
203 <220> FEATURE:
204 <221> NAME/KEY: misc_feature
205 <222> LOCATION: (22)..(22)
206 <223> OTHER INFORMATION: deazaguanine
208 <400> SEQUENCE: 13
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W--> 209 tcntcgtttt gtcgttttgt cntt   24

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212 <210> SEQ ID NO: 14
213 <211> LENGTH: 22
214 <212> TYPE: DNA
215 <213> ORGANISM: Artificial sequence
217 <220> FEATURE:
218 <223> OTHER INFORMATION: Synthetic oligodeoxynucleotide
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221 tcgccgtttt cggcggccgc cg                                    22
224 <210> SEQ ID NO: 15
225 <211> LENGTH: 21
226 <212> TYPE: DNA
227 <213> ORGANISM: Artificial sequence
229 <220> FEATURE:
230 <223> OTHER INFORMATION: Synthetic oligodeoxynucleotide
232 <400> SEQUENCE: 15
233 tcgtcgtttt acgacgtcgc g                                     21
236 <210> SEQ ID NO: 16
237 <211> LENGTH: 21
238 <212> TYPE: DNA
239 <213> ORGANISM: Artificial sequence
241 <220> FEATURE:
242 <223> OTHER INFORMATION: Synthetic oligodeoxynucleotide
244 <400> SEQUENCE: 16
245 tcgtcgtttt acgacgtcgt g                                     21
248 <210> SEQ ID NO: 17
249 <211> LENGTH: 24
250 <212> TYPE: DNA
251 <213> ORGANISM: Artificial sequence
253 <220> FEATURE:
254 <223> OTHER INFORMATION: Synthetic oligodeoxynucleotide
256 <400> SEQUENCE: 17
257 tcgtcgtttt acggcgccgc gccg                                  24
260 <210> SEQ ID NO: 18
261 <211> LENGTH: 72
262 <212> TYPE: DNA
263 <213> ORGANISM: Artificial sequence
265 <220> FEATURE:
266 <223> OTHER INFORMATION: Synthetic oligodeoxynucleotide
269 <220> FEATURE:
270 <221> NAME/KEY: misc_feature
271 <222> LOCATION: (1)..(10)
272 <223> OTHER INFORMATION: n is a, c, g, or t with a phosphorothioate link, and any 1-7
may
273       be absent
275 <220> FEATURE:
276 <221> NAME/KEY: misc_feature
277 <222> LOCATION: (11)..(30)
278 <223> OTHER INFORMATION: n is a, c, g, or t, and any 1-20 may be absent
280 <220> FEATURE:
281 <221> NAME/KEY: misc_feature
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      282 <222> LOCATION: (43)..(62)
      283 <223> OTHER INFORMATION: n is a, c, g, or t, and any 1-20 may be absent
      285 <220> FEATURE:
      286 <221> NAME/KEY: misc_feature
      287 <222> LOCATION: (63)..(72)
      288 <223> OTHER INFORMATION: n is a, c, g, or t with a phosphorothioate link, and any 1-7
may
      289      be absent
      291 <400> SEQUENCE: 18
W--> 292 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn gtcgttgtcg ttnnnnnnnn nnnnnnnnnn        60
      294 nnnnnnnnnn nn                                                           72
      297 <210> SEQ ID NO: 19
      298 <211> LENGTH: 84
      299 <212> TYPE: DNA
      300 <213> ORGANISM: Artificial sequence
      302 <220> FEATURE:
      303 <223> OTHER INFORMATION: Synthetic oligodeoxynucleotide
      306 <220> FEATURE:
      307 <221> NAME/KEY: misc_feature
      308 <222> LOCATION: (1)..(10)
      309 <223> OTHER INFORMATION: n is a, c, g, or t, with a phosphorothioate link, and any 1-
7 may
      310      be absent
      312 <220> FEATURE:
      313 <221> NAME/KEY: misc_feature
      314 <222> LOCATION: (11)..(30)
      315 <223> OTHER INFORMATION: n is a, c, g, or t, and any 1-20 may be absent
      317 <220> FEATURE:
      318 <221> NAME/KEY: misc_feature
      319 <222> LOCATION: (55)..(74)
      320 <223> OTHER INFORMATION: n is a, c, g, or t, and any 1-20 may be absent
      322 <220> FEATURE:
      323 <221> NAME/KEY: misc_feature
      324 <222> LOCATION: (75)..(84)
      325 <223> OTHER INFORMATION: n is a, c, g, or t, with a phosphorothioate link, and any 1-
7 may
      326      be absent
      328 <400> SEQUENCE: 19
W--> 329 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn gtcgttgtcg ttgtcgttgt cgttnnnnnnn       60
      331 nnnnnnnnnn nnnnnnnnnn nnnn                                              84
      334 <210> SEQ ID NO: 20
      335 <211> LENGTH: 90
      336 <212> TYPE: DNA
      337 <213> ORGANISM: Artificial sequence
      339 <220> FEATURE:
      340 <223> OTHER INFORMATION: Synthetic oligodeoxynucleotide
      343 <220> FEATURE:
      344 <221> NAME/KEY: misc_feature
      345 <222> LOCATION: (1)..(10)
      346 <223> OTHER INFORMATION: n is a, c, g, or t, with a phosphorothioate link, and any 1-
7 may
      347      be absent
      349 <220> FEATURE:
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RAW SEQUENCE LISTING ERROR SUMMARY   DATE: 11/01/2006
PATENT APPLICATION: US/10/644,052B   TIME: 12:14:58

Input Set : A:\C1037.70048US00.revised.ST25.txt
Output Set: N:\CRF4\11012006\J644052B.raw

Please Note:
Use of n and/or Xaa have been detected in the Sequence Listing. Please review the
Sequence Listing to ensure that a corresponding explanation is presented in the <220>
to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:12; N Pos. 3,6
Seq#:13; N Pos. 3,22
Seq#:18; N Pos. 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23
Seq#:18; N Pos. 24,25,26,27,28,29,30,43,44,45,46,47,48,49,50,51,52,53,54,55
Seq#:18; N Pos. 56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72
Seq#:19; N Pos. 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23
Seq#:19; N Pos. 24,25,26,27,28,29,30,55,56,57,58,59,60,61,62,63,64,65,66,67
Seq#:19; N Pos. 68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84
Seq#:20; N Pos. 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23
Seq#:20; N Pos. 24,25,26,27,28,29,30,61,62,63,64,65,66,67,68,69,70,71,72,73
Seq#:20; N Pos. 74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90
Seq#:28; N Pos. 6,19
Seq#:51; N Pos. 11,14
Seq#:57; N Pos. 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23
Seq#:57; N Pos. 24,25,26,27,28,29,30,67,68,69,70,71,72,73,74,75,76,77,78,79
Seq#:57; N Pos. 80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96
Seq#:58; N Pos. 19,22
Seq#:60; N Pos. 10
Seq#:61; N Pos. 10
Seq#:66; N Pos. 7,8,9,15,16,17,18
Seq#:74; N Pos. 4,18,20
Seq#:272; N Pos. 10
Seq#:273; N Pos. 10
Seq#:274; N Pos. 10
Seq#:277; N Pos. 4,18,20
Seq#:278; N Pos. 4,18,20
Seq#:279; N Pos. 7,8,9,15,16,17,18
Seq#:280; N Pos. 7,8,9,15,16,17,18
Seq#:296; N Pos. 13,14,15,16,17,18,21,22,23,24,25,26,27
Seq#:301; N Pos. 6,7,8,9,16,17,18,19,20,23,24,25,26,27,28,29
Seq#:302; N Pos. 6,13,16
Seq#:303; N Pos. 6,13,16
Seq#:306; N Pos. 7,8,9,12,15,16,17,20
Seq#:307; N Pos. 7,8,9,12,15,16,17,20
Seq#:308; N Pos. 12,20
Seq#:309; N Pos. 7,8,9,15,16,17
Seq#:311; N Pos. 4,5,6,7,8,11,12,13,14,15,16,17,18,19,20,23,24,25,26,27
Seq#:312; N Pos. 4,5,6,7,8,11,12,13,14,15,16,17,18,19,20,23,24,25,26,27,28
Seq#:312; N Pos. 29,30,31,32,35,36,37,38,39
Seq#:315; N Pos. 6,7,8,9,10,11,12,13,14,15,22,23,24
Seq#:318; N Pos. 14,15,16,17,18,19,20,21
Seq#:331; N Pos. 4,5,8,9,14
Seq#:332; N Pos. 6,13
Seq#:378; N Pos. 1,8,9,10,11,12,13,14,15,16,17,18,19,20

RAW SEQUENCE LISTING ERROR SUMMARY   DATE: 11/01/2006
PATENT APPLICATION: **US/10/644,052B**   TIME: 12:14:58

Input Set : **A:\C1037.70048US00.revised.ST25.txt**
Output Set: **N:\CRF4\11012006\J644052B.raw**

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Seq#:379; N Pos. 1,8,9,10,11,12,13,14,15,16,17,18,19,20
Seq#:380; N Pos. 1,8,9,10,11,12,13,14,15,16,17,18,19
Seq#:381; N Pos. 1,8,9,10,11,12,13,14,15,16,17,18,19
Seq#:382; N Pos. 1,8,9,10,11,12
Seq#:383; N Pos. 1,8,9,10,11,12
Seq#:384; N Pos. 1,10,11,12
Seq#:385; N Pos. 1,10,11,12
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Input Set : **A:\C1037.70048US00.revised.ST25.txt**
Output Set: **N:\CRF4\11012006\J644052B.raw**

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L:186 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:12 after pos.:0
L:209 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:13 after pos.:0
L:292 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:18 after pos.:0
M:341 Repeated in SeqNo=18
L:329 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19 after pos.:0
M:341 Repeated in SeqNo=19
L:366 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:20 after pos.:0
M:341 Repeated in SeqNo=20
L:475 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:28 after pos.:0
L:762 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:51 after pos.:0
L:857 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:57 after pos.:0
M:341 Repeated in SeqNo=57
L:882 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:58 after pos.:0
L:912 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:60 after pos.:0
L:930 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:61 after pos.:0
L:1001 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:66 after pos.:0
L:1113 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:74 after pos.:0
L:3495 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:272 after pos.:0
L:3513 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:273 after pos.:0
L:3531 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:274 after pos.:0
L:3583 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:277 after pos.:0
L:3611 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:278 after pos.:0
L:3634 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:279 after pos.:0
L:3657 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:280 after pos.:0
L:3860 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:296 after pos.:0
L:3936 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:301 after pos.:0
L:3964 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:302 after pos.:0
L:3992 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:303 after pos.:0
L:4049 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:306 after pos.:0
L:4082 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:307 after pos.:0
L:4105 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:308 after pos.:0
L:4128 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:309 after pos.:0
L:4173 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:311 after pos.:0
L:4216 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:312 after pos.:0
L:4264 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:315 after pos.:0
L:4307 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:318 after pos.:0
L:4479 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:331 after pos.:0
L:4502 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:332 after pos.:0
L:5065 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:378 after pos.:0
L:5088 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:379 after pos.:0
L:5111 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:380 after pos.:0
L:5134 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:381 after pos.:0
L:5157 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:382 after pos.:0
L:5180 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:383 after pos.:0
L:5203 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:384 after pos.:0
L:5226 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:385 after pos.:0
L:5290 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:389 after pos.:0
M:341 Repeated in SeqNo=389
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Input Set : **A:\C1037.70048US00.revised.ST25.txt**
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L:5320 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:390 after pos.:0
M:341 Repeated in SeqNo=390